



uigmek
One who watches river



April 2010

A newsletter for Alaska river and ice observers

Please Note.... RFC will be staffed weekends beginning April 24-25

CHPS: An Extreme Makeover for the River Forecast Center

Archived River Observer Data

Now Available on the Web

New Data Entry Site - WxCoder

El Niño and Alaska

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Lindsay Returns to the RFC

Check Bar Readings Request

A Note About Breakup Information

**Alaska - Pacific
River Forecast Center
6930 Sand Lake Road
Anchorage, Alaska 99502-1845
<http://aprfc.arh.noaa.gov>**

**Observers: Please don't forget
to mail in your
2010 Breakup Forms**



Breakup on the Yukon River near
the village of Tanana
Photo taken 05/12/09

CHPS: An Extreme Makeover for the River Forecast Center by Scott Lindsey

There won't be any visible signs in the products that the RFC produces (daily river forecasts and our flood watches and warnings) but we are in the process of a major makeover in how we put those forecasts, watches and warnings together. CHPS stands for the Community Hydrologic Prediction System, and it is a dramatic change in the way that we run the hydrologic models at the River Forecast Center.

The current modeling system is called the National Weather Service River Forecast System, or NWSRFS. This was originally built in the 1970's and 80's, and initially ran on a large mainframe computer. For those who don't remember the good old days, to make a run on the mainframe, we would use small cards with a key punch device that actually punched holes in the card. Each card represented one line of a computer program, so if the program was long, you ended up with a whole stack of cards. The cards were taken to a card reader, which extracted the lines of the program from the cards and submitted a computer job to the mainframe computer. Then after a time, the person making the run would get a copy of the output that contained the information for the river forecast which then had to be disseminated to the public (with no internet, of course).

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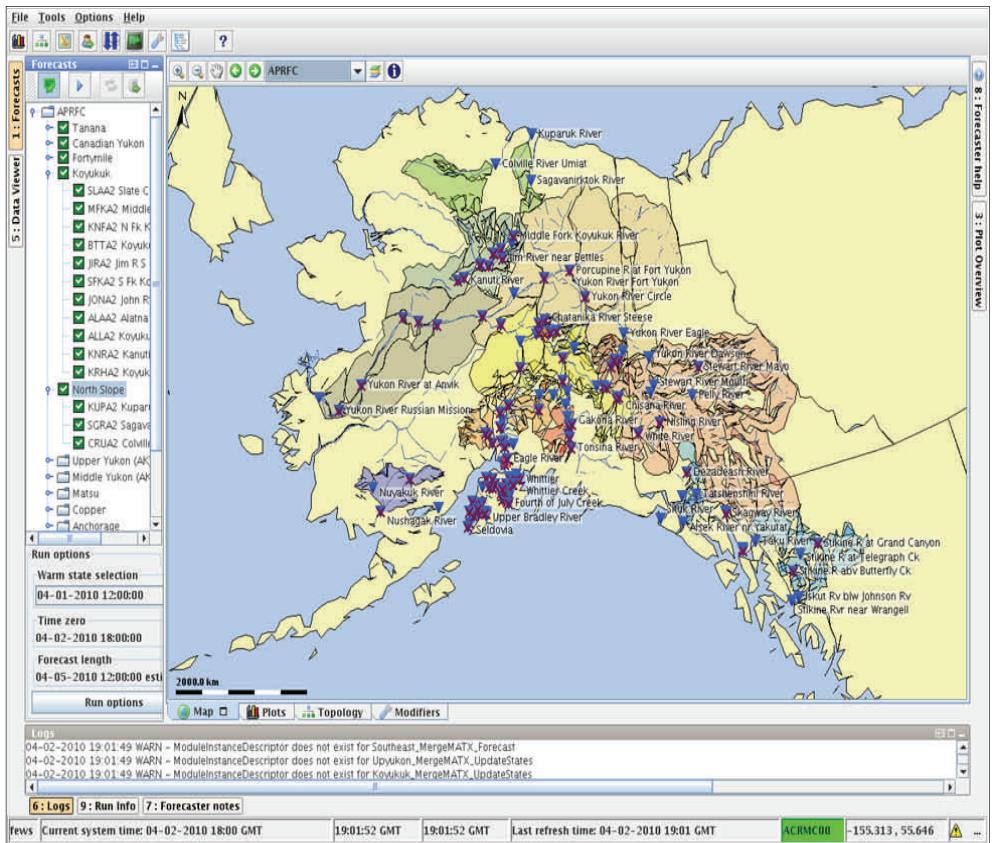


Figure 1 Starting screen for Community Hydrologic Prediction System (CHPS)

Archived River Observer Data Now Available on the Web

The River Forecast Center is in the process of getting all archived river observer data available on their website. Go to http://aprfc.arh.noaa.gov/php/rivobs/get_chart.php to see what sites are currently available in our River Observation Database. From the Database Main Menu, users can select sites from a drop-down menu, and choose their preferred data output - graph or table format. More sites will become available in the coming months.

Database Main Menu

National Weather Service
Alaska - Pacific
River Forecast Center

[HOME](#) [NWS Site Map](#) [National News](#) [Organization](#)

APRFC River Observation Database

Select by site ID:

Select Start Year: Select End Year:

Enter Start Month: Enter End Month:

[Plot Stage Chart](#) | [Plot Flow Chart](#) | [Plot Precip Chart](#) | [Plot Temp Chart](#) | [Get HTML Table](#) | [Create Excel\(CSV\) file](#)

Provisional Data

The archived data provided here (including stage, flow, precipitation and temperature) have not been fully quality controlled and are consider preliminary data. Data may include changes to datum, errors due to gage malfunctions or physical changes at the observing location. This is a preliminary set of stations, more data will be entered at later dates. Missing data is listed as "9999".

Contact us if the site you need is not available in the site list. [Request Site](#)

Get HTML Table - Willow Creek at Willow

Database Search Results

Site LID =WILA2

Start Year =1973

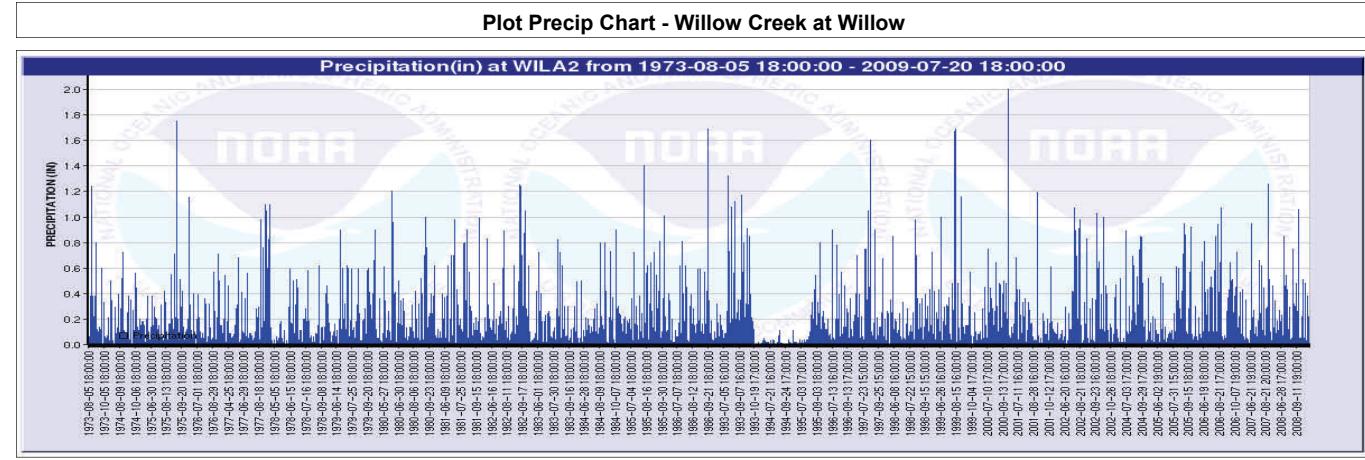
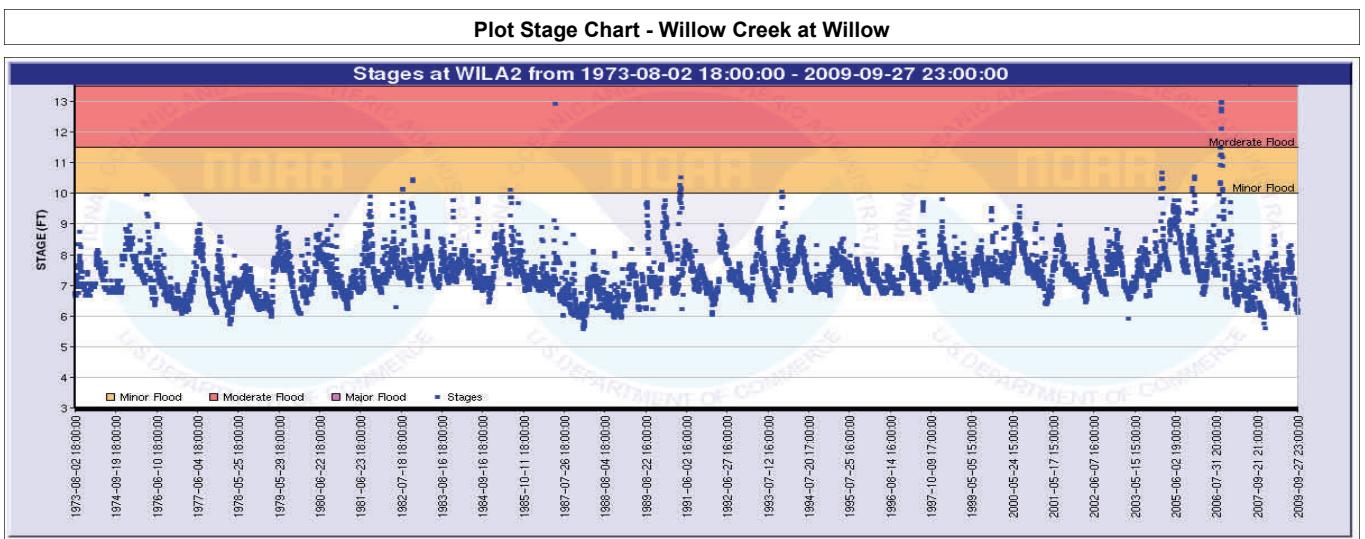
End Year =2009

Start Month =01

End Month =12

Number of records found: 6017

LID	Date(UTC)=AST+9	Stage(ft)	Flow(cfs)	Precip(in)	Acc Precip(in)	Current T(F)	Min T(F)	Max T(F)
WILA2	1973-08-02 18:00:00	6.74		0		51		
WILA2	1973-08-03 18:00:00	6.74		0		51		
WILA2	1973-08-04 18:00:00	6.64		0		50		
WILA2	1973-08-05 18:00:00	6.64		0.02		50		
WILA2	1973-08-06 18:00:00	7.14		0.06		50		
WILA2	1973-08-07 18:00:00	7.14		0.05		48		
WILA2	1973-08-08 18:00:00	7.24		0.29		48		
WILA2	1973-08-09 18:00:00	7.34		0		49		
WILA2	1973-08-10 18:00:00	6.94		0		49		
WILA2	1973-08-11 18:00:00	7.04		0		48		
WILA2	1973-08-12 18:00:00	8.34		0.38		48		
WILA2	1973-08-13 18:00:00	7.64		0		45		
WILA2	1973-08-14 18:00:00	7.54		0		44		
WILA2	1973-08-15 18:00:00	7.34		0		45		
WILA2	1973-08-16 18:00:00	7.04		0		45		
WILA2	1973-08-17 18:00:00	7.04		0		47		
WILA2	1973-08-18 18:00:00	6.94		0		49		

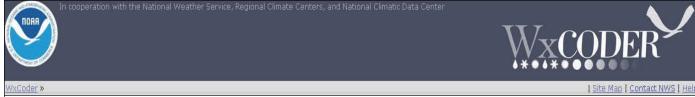


The computers have gotten a lot smaller, and the process has grown a lot faster, but the essential models that we ran 30 years ago are still being used. In an effort to make it easier for the hydrologists to utilize some of the new hydrologic modeling approaches that are being investigated at universities and research facilities today, the National Weather Service decided to update our hydrologic forecast system. CHPS is based on a framework called the Flood Early Warning System (FEWS) developed in the Netherlands. FEWS might be compared to our modern home computer network. Many homes today have one or more desktop personal computers, one or more laptops, I pods and other music and video storage devices, printers, digital cameras, home security webcams, and an assortment of other devices that all can be accessed through their computer network. FEWS is a system of hydrologic models, databases, data ingest, data viewers, forecast production and many other capabilities.

The adaptation of FEWS for purposes of the NWS Hydrology program is what we call CHPS, and initially we will use the same set of hydrologic models in CHPS that we use in NWSRFS, so that we can ensure that the system works properly. But CHPS has the added bonus of being based on modern software architecture. Where adding or using a different approach or model in NWSRFS was a process that literally required years to complete, with CHPS we will have a system that already has the capability to run a large number of different hydrologic models. Plus, it is easy to add other models and ways of doing hydrologic forecasting. A number of National Forecast Services around the world already use or are evaluating FEWS as a basis for their hydrologic forecasting, including: the Netherlands (where it was developed), Great Britain, Germany, Switzerland, Austria, Taiwan and Australia. For more information on FEWS see <http://www.wldelft.nl/soft/fews/pdf/delft-fews-ext.pdf>. In summary, Hydrologic Modeling at the River Forecast Center has been in a "remodeling" phase for many years (porting NWSRFS from Mainframe to smaller and speedier computers). Now we are in a "new construction" phase that should allow us to take much better advantage of the advances in research, technology and modeling.

**REMEMBER TO DOCUMENT HIGHEST
WATER LEVELS DURING BREAKUP
(see Page 8 of Fall 2009 Kuigmek for details)**

New Data Entry Site - WxCoder
<http://wxcoder.org/wxcoder/>



A data entry site has been created for observers who prefer to enter their daily observations online. WxCoder (Weather Coder) is "the official web-based entry system for the National Weather Service (NWS) Cooperative Observer Program (COOP)."

Observers who previously used the data entry form on the River Forecast Center (RFC) website will need to begin using WxCoder this season. Contact Becky Perry at the RFC to have an account set up so you can use the WxCoder site.

WxCoder has many advantages for the NWS as well as for our observers. The data entered will automatically populate the NWS database, and be immediately available to forecasters. Forecast Office and RFC staff will be able to print the Weather Service Form B-91 in the office, eliminating the need for observers to mail in their forms at the end of each month. And observers, if they wish, can also print copies of the forms for their records.

For more information contact Becky Perry
via email at becky.perry@noaa.gov
or by phone at 1-800-847-1739

El Niño and Alaska
by Rick Thoman, NWS Fairbanks

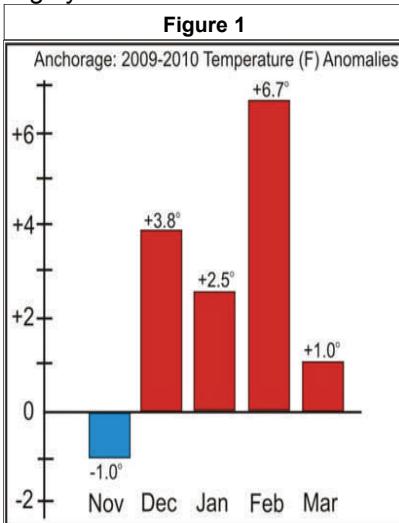
The 2009-2010 winter saw a moderate El Niño over the equatorial Pacific Ocean, with warmer than normal waters extending from about the dateline east to the South American coast. El Niño, and its partner La Niña, have significant impacts on the weather across much of the globe, especially during the winter season. In Alaska, the impacts on weather are most reliable in Southeast, where El Niño winters tend to be warm and wet. In Southcentral, and the Interior, El Niño winters tend to be on the mild side, though there is little correlation with precipitation. Western Alaska tends to be cool and wet in El Niño winters, and on the North Slope there is little correlation of winter weather and El Niño. Of course, there is almost always significant short term variation in the weather pattern, so even an otherwise mild El Niño winter can feature periods of colder than normal temperatures.

For more information about El Niño/La Niña visit the Climate Prediction Center at:
<http://www.cpc.ncep.noaa.gov/>

Winter 2009/2010 Weather Summary

by John Papineau, NWS Anchorage

It is clear that it was a warm winter, especially during the core months of December, January, and February. This is not too surprising since this was an El Niño winter. Figure 1 displays the monthly temperature anomalies (long-term average minus observed temperatures) recorded at the Ted Stevens International Airport in Anchorage. In general, the storm track shifted east from its climatological position to just south of the central Aleutians, which resulted in a higher number of storms moving into the Gulf of Alaska, compared to "normal". Rain and snow (precipitation) amounts were highly variable from one locale to the next; Anchorage, for example, recorded 4.14" of precipitation, which is very close



to a normal of 4.21" for the period from November through March. Snowfall totaled to 60.5", which is slightly above the 56.6" average. Kodiak City was warm and wet (131% of normal), while Valdez had some months with above normal precipitation and other months well below normal. The general lesson to be learned is that a warmer winter in the interior of Southcentral does not guarantee more snow and rain each month, even though the general trend is for increased storminess. Along the coast there is a better chance that enhanced south flow will produce more rain and snow than normal.

Outside of Anchorage it was generally warmer than normal from the Alaska Range eastward, with mixed anomalies from month-to-month in the Interior and west, as seen by the chart of Fairbanks temperature anomalies on Figure 2. It was also very dry across the Interior as illustrated by Fairbanks airport, which received 0.91" of precipitation, only 35% of normal. With the eastward shift in the storm track the greater Bering Sea region was colder than normal (especially in March) as the area experienced an increase in air moving out of the Arctic. By late March, record southward sea ice extent occurred from 170W to Bristol Bay. One of the most notable temperature anomalies (-13.9°) occurred on Saint Paul Island during March when

the island was surrounded by sea ice. In addition, precipitation was 41% of normal as cold air from the north is considerably drier than air from the North Pacific. Lessons learned from this current and previous El Niño's - the greater Gulf of Alaska region tends to be warmer than normal while the central and western Bering is colder than normal. In the Interior and northwest part of the state the temperature signal is mixed from month-to-month. In terms of precipitation, the Gulf of Alaska is often wetter than normal but there is considerable spatial variation as well. For the mainland south of the Alaska Range, precipitation totals tend to be mixed, some well above or below normal. In general, the Interior tends to be drier than normal while the Northwest is near normal.

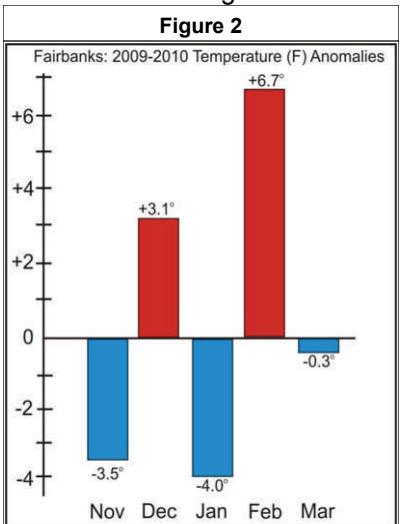
As noted, the shift in the storm track frequently occurs during El Niño winters; so how does this past winter matchup with the last several El Niño winters? The previous El

Niño occurred during the winter of 2006-2007; although by February the warmer than normal water temperatures in the eastern tropical Pacific had returned to normal, indicating a conclusion of the event. In Anchorage, the November through March average temperature anomaly was -3.7°, this was an outlier event for Southcentral which is clearly seen in Table 1. Older events however have typically above normal temperatures, in some cases as in 2002-2003 and 1976-1977 (+8.7°) well above normal.

What does the historical record indicate occurs in the April, May, and June time period after or during a weakening El Niño? If we use data from the Ted Stevens International Airport from the past five El Niño's, the temperature anomalies are: April: +2.5°, May: +1.0°, and June: +0.7°. In other words, there is a high probability that April will be warmer than normal in Southcentral, but the impact of the warmer tropical waters in the Eastern Pacific and the associated changes in the atmosphere diminish as we move into summer. This assessment agrees with the Climate Prediction Center's forecast, which they derive using various statistical and computer models, of above normal temperatures for this period.

Table 1

Year	Anomaly
1997-1998	+3.3
2002-2003	+8.0
2004-2005	+4.8
2006-2007	-3.7
2009-2010	+2.8



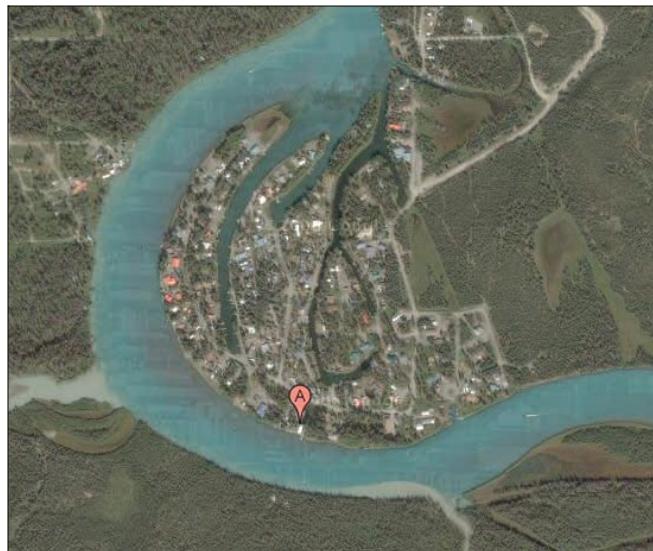
Spring Field Work

Early April means a trip north up the Parks Highway, and a trip south down the Seward Highway for two teams from the River Forecast Center. This year, Eric Holloway and Jamie Montesi took the drive north to service wire weight gages on the Little Susitna River at Houston, Willow Creek, Montana Creek, the Susitna River at Sunshine, and the Talkeetna River. They also took an ice thickness reading on Fish Lake (south of Talkeetna) and a snow depth measurement at the airport in Talkeetna.

Ben Balk and Scott Lindsey drove south to the Kenai Peninsula to take ice thickness measurements on Jean Lake and Johnson Lake. Ben and Scott took snow measurements at Turnagain Pass and the Stariski State Campground in Anchor River. They serviced the wire weight gage on the Anchor River and resurveyed the slope profile gage on the Kenai River in the Keys.



Jamie Montesi measured 10 inches of snow at the airport in Talkeetna on April 7



An aerial view of the Kenai River from Google Maps shows the location of slope profile gage

Lindsay Returns to the RFC

Lindsay Tardif will be returning to the Alaska-Pacific River Forecast Center as a temporary student employee, starting in mid-May. Lindsay is a New England native, who grew up in Midcoast Maine. Throughout her life in New England, the mountains, forests, rivers, and the Atlantic Ocean were her playground. She is an outdoor enthusiast who loves to go camping, skiing, whitewater rafting, along with numerous other outdoor activities. Lindsay attended Plymouth State

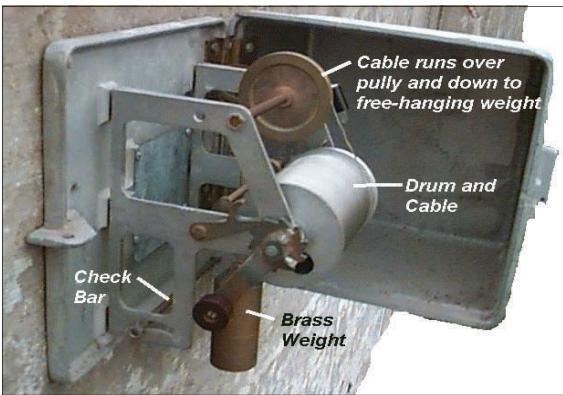
University, in Plymouth, New Hampshire, where she received a Bachelor of Science degree in Meteorology. Lindsay is a third year meteorology graduate student at the University of Oklahoma, pursuing a Masters degree in Meteorology. As a graduate student, she works as a research assistant for the Oklahoma Climatological Survey and as a teaching assistant for the OU School of Meteorology. In addition to her academic pursuits at OU, Lindsay has volunteered her time at the National Weather Service Weather Forecast Office in Norman, OK. She spent a great deal of time assisting forecasters and interns with daily duties as well as assisting the service hydrologist with daily products concerning the rivers of western Oklahoma and precipitation. Working with the service hydrologist, as well as visits with the Arkansas-Red River Forecast Center, sparked her interest in hydrology, which led her to the APRFC in Alaska. Lindsay is excited to be returning to Alaska and to the APRFC for another summer! She looks forward to talking with our observers throughout the summer, relaying information and taking river observations.



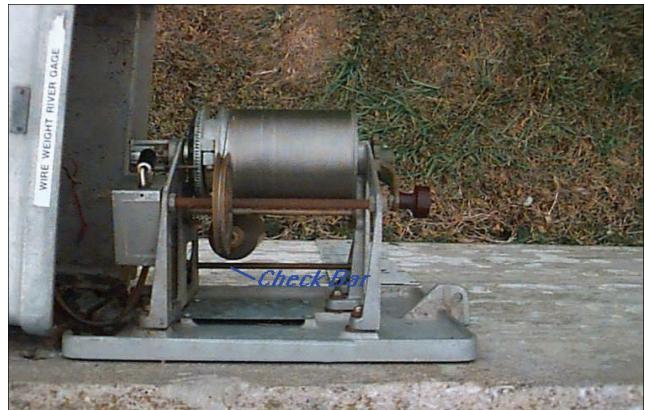
Lindsay Tardif on board a glacier cruise in Prince William Sound last summer

Check Bar Readings Request

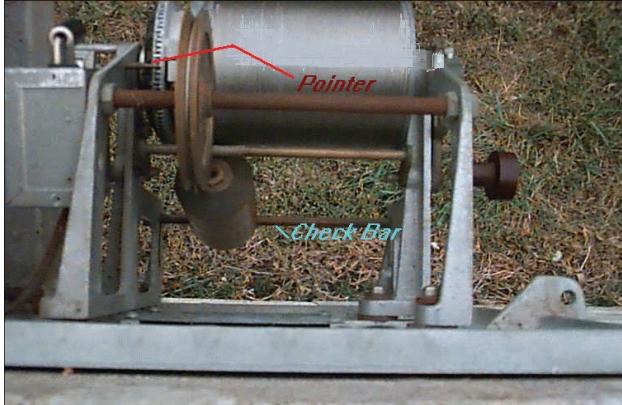
We ask those observers that take readings using a wire weight gage to take check bar readings a minimum of three times per month, preferably at the beginning, middle, and end of the month. Be sure to record these readings, along with the date the readings were taken, in the spaces provided at the bottom of your B-91 Form. Observers that phone in their gage readings can pass on their check bar readings at the same time.



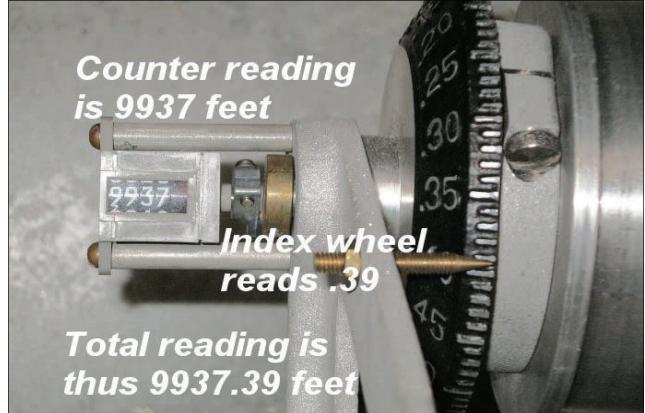
The inner workings of a wire weight gage.



The check bar is in back position, allowing the weight to descend to the water.



Slide the check bar fully forward toward the drum. When in this position, the cable weight, when released, can rest on the check bar.



The check bar reading equals the combined reading from the counter and the number of gradations on the graduated disk when the weight is resting on the bar with no slack in the cable.

A Note About Breakup Information:

We request your assistance in obtaining information on breakup on rivers and lakes in your area for the 2010 season. We would appreciate it if you would complete the River and Lake Breakup Information Form to the best of your knowledge and return the form to us. If you have any comments, please include them in the remarks area. The information we receive from you helps contribute to a more complete record of breakup data for Alaska and is greatly appreciated.

Use the link below to view the progress of breakup on rivers across Alaska. The breakup map will be updated as information becomes available.

http://aprfc.arh.noaa.gov/data/maps/brkup_map.html

Additional Breakup links:

View the Spring Breakup Outlook, Spring Flood Potential Map for Alaska, and more:

<http://aprfc.arh.noaa.gov/products/productmenu.php>

Search our River Notes database for breakup information on rivers and lakes, provided by river observers, pilots, NWS field offices, FAA Flight Service Stations, and more:

<http://aprfc.arh.noaa.gov/php/rivnotes/searchnotes.php>